THE POLAR TIMES

British explorers end global voyage

Associated Press Aug. 30

London — A British explorer home from a three-year, round-the-world trip through both the North and South Poles expects his biggest problems will be conversation and avoiding being knocked down on the roads.

"I'll probably find it difficult to get used to talking to people at first. The main problem will be trying not to get run down by the traffic," said 40-year-old Charles Burton.

He was a leading member of the British Transglobe Expedition, which made history by circumnavigating the world longitudinally, traveling by land, sea and ice.

In the last stage from the North Pole, Burton and expedition leader Sir Ranulph Fiennes, 38, were on a drifting ice floe for 99 days, before being picked up by their support vessel, the Benjamin Bowring.

The explorers and other members of the 40-strong expedition who traveled over parts of the route, went through Europe, Africa, Australia, the Pacific and the Northwest Passage, as well as the polar icecaps.

The expedition came to an end Sunday where it began, at Greenwich Pier on the Thames River in east London, where the Benjamin Bowring tied up. A spokesman called the 35,000-mile expedition "the last great journey left on Earth."

Prince Charles joined the ship for its procession up the river and took a turn at the helm. Crowds of people and pleasure boats welcomed the ship.

Fiennes, a former army officer, commanded British troops who helped Sultan Qaboos Bin-Said of Oman put down a revolt. The ship flew the flag of his old regiment, the Special Air Services, the elite undercover unit.

"The best moment of the trip is now, just being back in England, sailing up the Thames on this beautiful sunny day," said Fiennes, an Etonian whose family motto is "Look for a brave spirit."

Asked to pinpoint the worst moment of their travels, Fiennes and Burton said they could not — "There were too many."

"We didn't know what to do the first time we met a polar bear," said Burton.

"They are 10 feet tall and we had heard so many different stories. Some people said they were friendly, but they can also eat people. We usually fired a few shots above their heads to frighten them."

Hundreds of commercial sponsors spent more than $17 million fitting out the expedition and keeping it supplied. In return, reports were sent home on how the products stood up.

Fiennes said the expedition collected valuable scientific data on the seas, glaciers, climate, wildlife, radio wave propagation and the human heart — monitored under stress.

Seals Used In a Study Of Crib Death

BOSTON, Aug. 17 (UPI) — Researchers at Massachusetts General Hospital are preparing experiments using pregnant seals in hopes of unlocking the mystery of sudden infant death syndrome, or crib death, which kills about 7,500 babies a year.

Financed by the National Science Foundation, the research will examine the physical responses of the seals and their unborn pups during dives beneath the Antarctic ice shelf this fall.

The researchers, led by Dr. Warren Zapol, an associate professor of anesthesia at the Harvard Medical School, will seek to examine the "diving reflex," which has some of the characteristics of infant death syndrome, including a stoppage of breathing.

"We're all diving animals for at least nine months of our lives" — the nine months in the womb, Dr. Zapol said.

"Infants have been 'divers,'" he said. "They haven't been long out of the diving state. We have to lose a good number of our diving reflexes as we leave the aquatic environment." If the research with seals sheds light on the reflex, perhaps it will also shed light on whether such a reflex in newborn babies "precipitates or compounds the cardiovascular changes of sudden infant death syndrome," he said.

A bio-engineer, Dr. Roger Hill, has made a small computer that will be attached to the back of the pregnant seals. During their dives, the heart rates and blood chemistry of the mother and pup will be monitored.

The Polar Times

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AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are $2.00 a year or $5.00 for 3 years, which entitles members to receive THE POLAR TIMES twice a year.

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Q. Why are there so many kinds of white animals in cold climates and black animals in hot climates, if black absorbs solar heat and white reflects it?

A. In cold climates, evolutionary selection for concealment is probably the main reason for white animals. In any case, extreme and dangerous weather at the poles or in mountains means very cold air and howling winds; these factors are so chilling that any contribution solar heating makes to survival is probably trivial. The subject has been studied, theoretically and experimentally, by G. E. Walsberg and colleagues at Washington State University. Their findings indicate that white animals may have a slight thermal advantage in cold climates because light penetrates their coats more deeply, while in black animals light energy is converted to heat in the top layer of the coat or plumage, where it can be whisked away if any wind is blowing. Conversely, a black animal — a desert vulture, for example — may be better off in deserts than a white animal, again because solar heat is confined to the top layer of plumage or fur and carried away by the wind.

Haze From Siberia

A possible source has been identified for the "Arctic haze" that has dimmed Alaskan skies in recent winters. It is the large mining and ore-smelting complex that was developed in the Soviet Union at Norilsk, in the Siberian Arctic, during the 1970's.

According to an analysis by Glenn E. Shaw of the University of Alaska's Geophysical Institute, air masses crossing Alaska during the worst episodes had previously passed over the Norilsk region. They were laden with particles of titanium, chromium, manganese, iron and nickel.

On clear days, the few particles recorded were of aluminum and silicon, attributed to continental dust, and sodium and chlorine, presumably of oceanic origin.

Like the Sudbury Basin in Ontario, Norilsk is one of the world's chief sources of nickel and copper sulfide ores. In the past, fumes from Sudbury have destroyed vegetation for many miles down wind. It is estimated that Norilsk is smelting half a million tons of nickel and copper annually.

American satellite photographs taken above Siberia have shown plumes from two plants, each traceable across the landscape for 30 miles. By the time such plumes reach Alaska they may be 100 miles wide and could account for the periods of winter haze, Dr. Shaw writes in the Oct. 28 issue of Nature. He warns, however, that air mass trajectories cannot be traced with sufficient accuracy to put the blame squarely in Norilsk.

Q. Why don't the inside walls of igloos melt?

A. They do, sometimes. Eskimos build round snow houses mainly as shelters while on winter hunting trips and don't expect them to last forever. Dr. Ernest W. Marshall, a geologist at the State University of New York's Potsdam campus, says the inside of a snow house is not wet to the touch. Dr. Marshall, who has built and lived in snow houses on Arctic expeditions, says that in very cold weather, 35 to 40 degrees below zero Fahrenheit, any meltwater on the inside of the igloo is absorbed back into the porous snow and refrozen, without ever becoming drippy. In the spring, the structure becomes soft and begins to deform, eventually subsiding into a lump.

Glaciers normally move a few inches a day, but in 1966, at Mount Steele in the Yukon, a glacier was observed from the air to be traveling at 2 feet an hour.

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Commission Votes to Ban Hunting of Whales

By PHILIP SHABECOFF
The New York Times

WASHINGTON, July 23 — The International Whaling Commission voted today to ban all commercial whaling, starting in 1986.

The 25-to-7 vote, taken at the commission's session in Brighton, England, does not necessarily mean an end to the killing of whales. Participants at the commission's meeting said some of the nations that opposed the ban, including Japan and Norway, had threatened to file exceptions to the decision and continue to hunt whales.

In addition, the commission still permits subsistence whaling by Eskimos and other native hunters. Eskimos continue to hunt the endangered bowhead whales, among other species.

Nevertheless, conservationists called today's vote a turning point in their long battle to save the whales. They said the decision to bar whaling, coming after a 10-year debate, meant that international public opinion would increase pressure on the whaling nations.

Russell E. Train, president of the World Wildlife Fund-United States and former Administrator of the Environmental Protection Agency, said the commission's moratorium represented "a great victory in the long fight to save these magnificent creatures." He called the vote "a triumph for human decency and compassion."

Mr. Train said thousands of whales had been slaughtered since he first proposed a moratorium on commercial whaling at the United Nations Conference on the Human Environment in Stockholm in 1972.

Mark Roberts of Greenpeace, a militant conservationist group that has tried to protect whales, said today's vote was "an incredible victory."

The seven nations voting against the ban were Brazil, Iceland, South Korea, Japan, Norway, Peru and the Soviet Union.

Voting in favor were Antigua, Argentina, Australia, Belize, Britain, Costa Rica, Denmark, Egypt, France, West Germany, India, Kenya, Mexico, Monaco, the Netherlands, New Zealand, Oman, St, Lucia, St. Vincent, Senegal, Seychelles, Spain, Sweden, the United States and Uruguay.

Five nations abstained — Chile, China, the Philippines, South Africa and Switzerland. Dominica and Jamaica were absent.

The commission also voted to decrease the number of whales that may be caught each year until 1986, when the total ban is to begin.

The commission is expected to vote Saturday to set the annual catch limits, but conservationists said they expected the levels to be reduced drastically from current limits, which already represent significant cutbacks from earlier years. The 1981 quota was a fifth of the total worldwide catch in 1960 of more than 67,000 whales.

The populations of many types of whales have continued to decline, however, and several kinds are considered close to extinction. Among the whales threatened by commercial whaling are sperm, fin, sei and minke whales.

Because of whales' complex migration patterns, there is no reliable way to estimate how many survive in the world's oceans.

Japan, which for some years has been the world's major whaling nation, has resisted a ban on the ground that whale meat is a traditional food and that whaling provides many jobs.

If Japan or other whaling nations were to defy the commission's moratorium, the United States could exert more than moral pressure to persuade them to change their policy.

Under the Pelly and Packwood-Magnuson amendments to the Fishery Conservation and Management Act of 1976, the Government can ban imports of fish and deny fishing rights within its 200-mile coastal zone to nations that do not comply with rules set by the commission.

The Reagan Administration has strongly supported a moratorium on whaling. A year ago, President Reagan sent a letter to the commission urging it to take such as step, saying, "Our cooperative efforts so far to regulate whaling have been tragically unsuccessful."

Washington Asks Tokyo Not to Defy Whaling Ban

WASHINGTON, Nov. 3 (Reuters) — The United States has sent a message to Tokyo urging the Japanese not to defy the ban on commercial whaling that takes effect in 1985, the State Department said today.

The whaling ban was adopted by the International Whaling Commission in July.

Japan, which was one of the seven nations opposing the action, has filed an objection against the decision, an indication that it will continue whaling.

5 Nations Will Defy Ban on Whaling

CAMBRIDGE, England, Nov. 8 (UPI) — Japan, the Soviet Union and three other nations have filed objections to a worldwide ban on commercial killing of whales that goes into effect in 1986, the International Whaling Commission said today.

The other three countries are Chile, Norway and Peru, all of which operate whaling fleets from their coasts.

The objections mean that the five nations have served notice they will not consider themselves bound by the ban on commercial killing decided by the 39-nation commission at its annual conference at Brighton July 24.

Only 6 whales make season one of worst

BARROW—Only six whales were landed this spring by nine Eskimo villages along Alaska's northern coast, making this year one of the poorest seasons on record.

"It's been pretty poor," said Marie Adams, executive director of the Alaska Eskimo Whaling Commission in Barrow.

However, the villages of Nuiqsut and Kaktovik on the eastern North Slope, will hunt in the fall. They have been allotted three strikes.

June 25 and 28, the village of Wainwright had a festival to celebrate landing two whales for their two strikes. They were one of the most successful villages this year.

Barrow, which had five strikes, has not landed a whale. A strike was given to them by the village of Whales because they were unsuccessful and the sea ice had deterioriated. Barrow may try again to land a whale in late August, Adams said.

Last year, 14 whales were landed in the spring hunt, and three were taken in the fall hunt, for a total of 17. Four of the whales were landed in Barrow.

Scientists keep a wary eye on movements of glaciers

Larry Gedney

The Anchorage Times

As firmly established as the science of glaciology is today, it seems strange that as recently as 150 years ago, the very existence of glaciers was a matter of hot dispute.

The evidence left by ancient glaciers was all around — grooved and polished bedrock, landforms composed of glacial debris such as moraines and eskers, jagged mountain peaks, deep valleys, even certain lakes and rivers. However, it was argued that glacial features were not produced by ice, but by the action of ancient water — the ever-popular, all-explanatory Biblical Flood.

This presented some problems. For instance, debris was not sorted by size as it is by flowing water, and huge boulders the size as it is by flowing water, and huge boulders the size of houses were often found transported great distances from their point of origin. Because of these and other anomalies, Charles Lyell, a leading British geologist, was the firste to propose an ice-related origin in 1833. It was his suggestion that the large boulders had been transproted inside icebergs from the North Pole carried by — you guessed it — the Flood.

Lyell was off the mark, but his idea contained at least a grain of truth: ice can transport boulders.

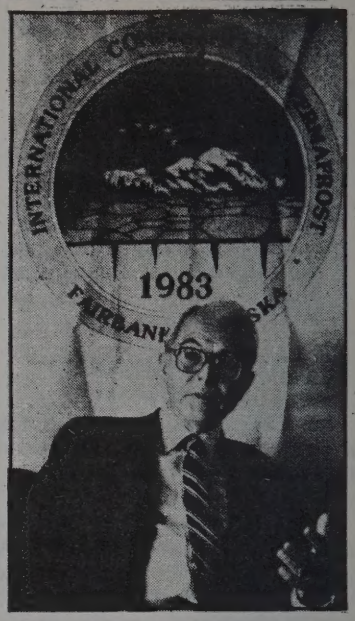
While this notion was novel to scientists, it was a long-established fact to the farmers and villagers who lived in the glacier-studded Alps. For generations these people had watched glaciers retreat and advance, even to the point of encroaching on their farms and settlements. From first-hand observations they knew that the ice moved, that it gouged and polished rock, and that it deposited rocky debris as it retreated. But the sensible observations made by the peasants were ignored by the scientists.

Enlightenment finally began to spread through the scientific community in 1837, when Louis Agassiz, president of the Swiss Society of Natural Sciences, first addressed the possibility of an "Ice Age." He saw an "epoch of intense cold," during which all life perished under an enormous ice sheet which descended from the North Pole and extended over much of the northern hemisphere. Even though we now know that the ice did not come from the North Pole, this was a step in the right direction, but it was widely resisted because of diehard adherence to the old Flood notion.

Ironically, it was Agassiz' concept of global glaciation which led him into direct conflict with Charles Darwin. While Darwin was one of the first scientists in England to accept Agassiz' radical ideas, Agassiz was violently opposed to the concept of evolution. This is why he insisted, irrationally, that the ice sheets had destroyed all life, and that there could therefore be no direct link between species of the past and present. The Creator must have started all over again after the Ice Age, maintained Aggasiz.

We now know, of course, that there was an ice age, but that all life was not destroyed. As a matter of fact there have been several ice ages. A century of research since Agassiz' death in 1873 has established that during the last million years, there have been at least four, and perhaps as many as 10 periodic invasions of ice around the world.

Larry Gedney is an associate professor at the University of Alaska's Geophysical Institute in Fairbanks.



DR. TROY L. PEWE
Chairman of U.S. committee

Permafrost conference set for 1983

The Anchorage Times

The moon is more than Swiss cheese and a smiling face.

It has a little bit of star dust, quantities of rock and permafrost.

Yes, it is the same type of permafrost that is a common problem in Anchorage. The kind that can cause a door to stick due to settlement of the house; a porch to be inches off the pillars; a $1 million lot to be worth only $300,000 because the geologist found an ice layer in the sub soil; and bubbles, pot holes, or roller coaster effects in the roads.

These problems and others will be addressed at The Fourth International Conference on Permafrost, July 18-22, 1983 at the University of Alaska-Fairbanks. Dr. Troy L. Pewe (pronounced pay-way), chairman of the U.S. organizing committee and former head of the University of Alaska geology department, was in Anchorage this week for a conference planning session.

"With over 80 percent of Alaska, 22 percent of China, over 50 percent of the U.S.S.R. and some oceans underlaid with permafrost, the study of this phenomenon has become one of international proportions," he said.

Polar bear: denizen of North

Jim Greiner
Daily News-Miner, Fairbanks

Polar bears are curious, unafraid of most things, and are, as a result, dangerous. The land of their choice is an unpopulated land where, especially now that it is illegal for anyone but Native hunters to kill them, they live in virtual anonymity. It is a place of flatness over which the wind races eternally, visible in the snaking tendrils of blown snow that follow its surface and numbs the exposed faces of men who go there. Broken only by pressure ridges and ice leads, one wonders what quirk of evolutionary logic kept the white bear long enough for him to choose it as a permanent home.

Polar bears and brown bears evolved from a common ancestor, a fact which is proveable biologically by matings which have taken place in zoos. As a result, the white bear is as large, or can be, as the largest of his brown cousins, and though the Boone and Crockett record still carries a brown bear as its largest, many professional guides will tell you that there are polar bears that exceed it, "somewhere out there."

The adaptations that have made survival possible for polar bears are unique. Most obvious, perhaps, is his white color which allows him to blend almost perfectly with the snowy landscape in which he lives year-around. In other animal species, such protective coloration is often seemingly designed for protection from predators, but in the case of the white bear, it is a functional matter. To blend with the snow is to hunt efficiently, for the big bears of the northern Arctic have no predators, except man.

The long white guard hairs have another property which is useful to the owner—they shed water which prohibits the buildup of ice on the coat even after a swim in the supercooled Arctic Ocean of mid-winter.

Beneath is a dense layer of short underfur for warmth. In addition to these modifications, polar bears have fur-covered feet and their teeth are specially adapted to the eating of meat. The latter differ from those of other Alaskan bears which are provided with dentition suited for a more omnivorous (both animal and plant) diet.

Polar bears den on land by choice, a fact generally unknown to most of us, but will also seek out places among the pressure ridges during late winter. They enter such dens during late October and November for the purpose of bearing cubs, and the sites usually consist of nothing more than an overhanging bank or ice shelf where snow will drift during the weeks to come.

Polar bears, like other bears, do sleep during the denning period, again a fact unknown to many. Sows bear up to three tiny young during the month of December. The babies grow at an astounding rate, reaching weights of about 15 pounds by March, when they break out of the drifts with the female into the hostile world that will be their permanent home.

The sow and her young stay near the open den for several days during which the cubs become acclimated to the outside temperatures which often still stand in the sub-zero range. After they become used to the cold, they begin traveling on the drifting sea ice where they learn the fine art of hunting seals for a livelihood.

Polar bears exist at the high end of a food chain that is rich in its content of vitamin A. They eat seals which, in turn, eat salmon, which in turn, eat plankton, and all of these species represent vitamin A-rich food.

As a result, polar bears ingest high quantities of the steroid which is then stored in large quantities in the liver. Though the white bears thrive on such a diet, to eat polar bear liver is to put your life in danger if you are a mere human. Sloughing of the skin and other miseries follow, and enough polar bear liver can be fatal.

Polar bears have deep blue tongues, lips and gums. This coloration seems to be another adaptation to life on the snow. The pigment melanin which causes it also underlies the bear's entire skin and probably works to protect against solar radiation during the 24-hour daylight of summer.

* * * * *

Polar bears and walruses on Norway's arctic archipelago of Svalbard now seem to have been saved from the threat of extinction. The polar bear population on the island is estimated to be 2,000 individuals. Whereas there were very few walruses on Svalbard during the 1950s and 1960s, the species seems to have regained a substantial foothold there with a stock of about 400 individuals.

* * * * *

An almost complete skeleton of a 10,000-year-old polar bear was recently discovered at Finnøy in western Norway. Archaeologists characterize the find as sensational, since thus far only fragmented remains of prehistoric polar bears have been found in Europe.

* * * * *

The aurora from outer space

An aurora is the visible manifestation of an immense electrical current system that is continuously pumping millions of megawatts of electromagnetic and thermal power into the upper polar atmospheres. At times, the current produced exceeds the entire electrical generating capacity of the United States.

Such an astonishing electrical phenomenon and the awesome displays that it creates are a product of the interaction of the solar wind (a hot gas streaming from the sun) and the earth's magnetic field. At the height of an auroral display, the upper atmosphere functions as a gigantic television screen as the air molecules give off light when they are struck by electrons and protons that have been ejected from the surface of the sun a few days earlier. These particles are funneled down along the earth's magnetic field lines into an "auroral oval" surrounding the magnetic poles. The diameter of the oval becomes greater (and the aurora moves farther south—or north, in the southern hemisphere) when the number of injected particles increases, such as during a period of intense sunspot activity.

As long ago as 1860, scientists suspected that the aurora occurred as a ring surrounding the north pole, although they incorrectly thought that it appeared along the edge of pack ice in the Arctic Ocean (it was not then known that nearly identical auroras occur simultaneously around the south magnetic pole).

Professor Syun-Ichi Akasofu and his team of auroral scientists at the Geophysical Institute have done much to solve the mysteries of the aurora over the past 20 years, but one tantalizing observation lay beyond reach—it had never been possible to observe the entire auroral oval at one time. The view was just too big.

During the International Geophysical Year in 1957-58, auroral scientists around the world put forth an effort that enabled simultaneous photographs of the aurora to be made from more than 100 different localities. Even so, this was less than ideal for getting an overall view of the auroral display, because the field of view from a single location is only about 1/20 or 1/30 of the entire polar sky.

Even after the beginning of the Space Age, satellites orbiting at altitudes of a few hundred miles still could not take in the full scene. In the fall of 1981, however, auroral photographs were taken, for the first time, from an altitude of about 12,500 miles above the north polar region by NASA's Dynamic Explorer Satellite.

It can be clearly seen in the photograph that the planet earth wears the aurora like a crown. In Alaska, when you see a ribbon of aurora stretching from the eastern to the western horizon, you are looking at only a small portion of the auroral curtain that surrounds the magnetic pole.

So at last, there exists graphic confirmation of what auroral scientists have known for years. Prof. Akasofu's group and others like it around the world can rightfully chorus a lusty "We told you so!"—*Larry Gedney*

Why arctic fish don't freeze

Fish, being cold-blooded, maintain body temperatures equal to that of the water surrounding them. The polar oceans are characterized by winter water temperatures of 29.5 degrees to 28.4 degrees Fahrenheit. Blood plasma of most fish freezes at around 30.9 degrees to 30.6 degrees Fahrenheit. Why, then, are there any fish in the arctic oceans at all? (Whales and other warm-blooded ocean denizens do not have to answer this question.)

The answer, as given in the June 1982 issue of Arctic in an article by Garth L. Fletch and co-workers, is that marine fish in the high arctic have antifreeze in their veins—and that does not mean a nip of Old Grandad.

The Arctic sculpin, for instance, manufactures an antifreeze protein in its blood named, appropriately enough, glycoprotein. This depresses the freezing temperature of its plasma sufficiently to permit it to live in the winter arctic waters without turning into the block of ice you'd expect to find in your freezer.

Interestingly, the plasma of sculpin in more temperate climates, such as Newfoundland, contains the antifreeze protein only during the winter months, while their cousin in the Beaufort Sea manufactures it year round—*Larry Gedney.*

First IPY Study Underway

Prepared for Information North by Professor William Barr.

1 August 1982 marked the start of the centennial of the First International Polar Year 1982-83. This milepost event in the history of polar science was the brainchild of Lt. Karl Weyprecht of the Austro-Hungarian Navy. During his participation in the Austro-Hungarian North Pole Expedition of 1872-74 he became convinced that the era of purely geographical polar exploration was approaching its close. He foresaw that the emphasis in the future must be placed on coordinated scientific research, preferably involving international cooperation. In his view the two areas where such an approach could prove most profitable were meteorology and earth magnetism.

On his return south, Weyprecht actively promoted his concept and the outcome was the First International Polar Year. A total of 11 nations mounted 14 expeditions, 12 to the northern polar regions and two to the sub-Antarctic. For a full year they were to carry out a synchronized program of observations and measurements in the areas of meteorology and earth magnetism, using standardized procedures and instrumentation. Of secondary importance were studies of the aurora, geology, botany, zoology, and, where appropriate, ethnography.

All the expeditions reached their appointed destinations except the Dutch expedition, whose ship, *Varna*, bound for Dikson at the mouth of the Yenisey, became beset in the ice of the Kara Sea and drifted all winter before being crushed. The American expedition to Lady Franklin Bay on Ellesmere Island is remembered especially for the tragedy associated with its retreat south; of an original complement of 25 men only six survived a terrible winter of starvation at Camp Clay on Pim Island.

Indeed this disaster has tended to overshadow the full scope and achievements of the First International Polar Year. Probably largely due to the language barriers, no single comprehensive account of the project has ever appeared. To mark the centennial of the event, Professor William Barr of the University of Saskatchewan is devoting a year's sabbatical leave to the writing of just such an account. He has just completed a three-month stay at the Arctic Institute in Calgary, and will be spending the winter of 1982-83 at Dartmouth College in Hanover, New Hampshire, where much of the essential documentation, inherited from the Stefansson Collection, is housed in the Baker Library.

Professor Barr presented a paper on the Dutch contribution to the First International Polar Year at the Annual Meeting of the Canadian Association of Geographers in June. An illustrated article on the German expedition to Clearwater Fiord on Baffin Island will appear in the autumn issue of *The Beaver.*

Aleksandr Belyakov, Soviet Flier

By THEODORE SHABAD

The New York Times / Dec. 10, 1982

Aleksandr V. Belyakov, a Soviet aviation pioneer who took part in the first flight from Moscow to the United States across the North Pole, died in late November, according to Soviet newspapers received in New York.

Mr. Belyakov was the navigator in the three-man crew that flew an ANT-25 plane to Vancouver, Wash., in June 1937, covering the 3,284 miles in 63 hours 25 minutes. The Russians had hoped to reach Oakland, Calif., but bad weather and low fuel forced them to land some 600 miles short of their goal.

The flight, which made front-page headlines around the world, occurred at the height of Stalin's purge of the military. A number of high-ranking officers, including Yakov I. Alksnis, the air force chief, who had seen the fliers off at Shchelkovo airfield outside Moscow, disappeared shortly afterward.

The ANT-25 plane, which was designed by Andrei N. Tupolev, held various long-distance records in the mid-1930's. It was a low-wing plane, with an unusually long wingspan of 110 feet for a single-engine aircraft, and had a cruising speed of 115 miles an hour.

In June 1975 the town of Vancouver, across the Columbia River from Portland, Ore., dedicated a memorial to the 1937 landing and invited Mr. Belyakov and the co-pilot on the flight, Georgi F. Baidukov, to the ceremonies as the guests of the Boeing Company. The pilot, Valery P. Chkalov, one of the most celebrated Soviet fliers, had been killed in a crash in 1938. This time the Soviet visitors covered the distance from Moscow in some 11 hours aboard a modern Il-62 airliner.

Crash Landing Ends Flight

The three-man team first made aviation history in July 1936, when they flew another ANT-25 on a 5,821-mile nonstop flight on a great circle route from Moscow across the Arctic to the Pacific coast of the Soviet Union in 56 hours 20 minutes. They kept going until their fuel gave out and made a crash landing on the sandspit of tiny Udd Island, north of the mouth of the Amur River.

In honor of that flight, the island on which they had landed was renamed Chkalov, and two nearby islets were named Baidukov and Belyakov.

Mr. Belyakov was born Dec. 21, 1897, near Noginsk, east of Moscow, the son of a village teacher.

After World War II, in which he rose to the rank of lieutenant general in the air force, he headed the department of navigation science at the Soviet Air Force Academy until his retirement from military service in 1960.

In recent years he was a professor at the Moscow Physical-Technical Institute, a prominent engineering school, at Dolgoprudny, a northern Moscow suburb. For his work in mapping and geodesy, he was awarded the degree of doctor of geography; he was also the author of a number of books on aerial navigation.

Musk ox researcher John Teal dies

ANCHORAGE (AP)—John Teal Jr., an anthropologist who founded the Institute of Northern Agricultural Research, and Oomingmak, the Musk Ox Producers' Cooperative, has died in Vermont. He was 61.

Teal is credited with saving Alaska's musk oxen, proving they could be domesticated and establishing a market for their wool. In 1964 he established the University of Alaska musk ox farm in Fairbanks with animals captured on Nunivak Island. The musk ox herd, which was moved to Unalakleet in 1976 and 1977, now provides the qiviut used by the cooperative.

"He devoted many years proving that the musk ox could be domesticated and their qiviut combed, spun and knitted into garments that are eight times warmer than sheep wool," said Bill Bacon, president of Oomingmak.

Teal's son, John, said the co-op's work with musk oxen will continue, and that he planning on traveling to Alaska next month to review the business, which employs 211 Eskimo women as knitters.

Teal and his family left Alaska for Bainbridge Island, Wash., in the 1960s after their home on the bank of the Chena River nearly washed away in the flood.

Born in New York City, Teal graduated from Harvard University with a degree in anthropology. He received a master's degree in international relations from Yale University.

During World War II, Teal commanded a bomber group and later taught at universities in England, vermont, Ohio and Montreal.

He led 14 arctic expeditions and had articles published in a variety of internationally recognized publications.

In 1953, Teal founded the Institute of Northern Agricultural Reasearch in an effort to improve the economic and social condition of arctic residents by cultivating indigenous plants and capturing animals.

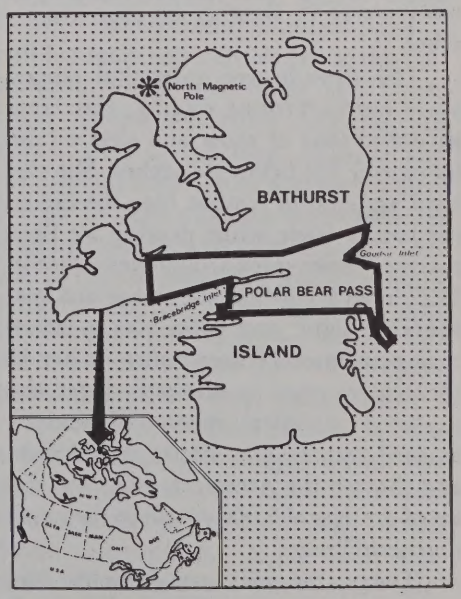
Wildlife area given protection

Polar Bear Pass on Bathurst Island in the Northwest Territories has been named a national wildlife area by the federal government and will receive long-term management and protection.

The decision to make the site a wildlife area came as a result of recommendations by the International Biological Program (IBP). Polar Bear Pass has been an ecological site under the program, which is a co-operative effort by 58 nations, including Canada, for the preservation of natural areas for scientific study.

As a national wildlife area, Polar Bear Pass will come under the jurisdiction of the Canada Wildlife Act and Environment Canada and will be managed jointly with Indian and Northern Affairs Canada and the government of the Northwest Territories.

Polar Bear Pass is the first IBP site approved in the North. A large number of other sites have been proposed but these and others yet to be identified will be considered in the broader context of the northern land use planning policy of Indian and Northern Affairs Canada and a new northern conservation strategy.



The site, located some 150 kilometres northwest of Resolute, has been called an "Arctic oasis" by biologists because its unusually rich vegetation and ponds support a wealth of Arctic wildlife, including muskox, Peary caribou and some 50 species of bird. Polar bears cross the island westward from Goodsir Inlet to Bracebridge Inlet through the fertile core of the site, the lowland pass, hence its name.

The Bering Sea: "What are the wild waves saying?"

by Don Dedera

Exxon underwrites the Bering Sea Comprehensive Oceanographic Measurement Program, which is accumulating meteorological data on Alaska's storm-tossed oceans.

EXXON USA

THIRD QUARTER, 1982

They are telling scientists about a little-known area where much of North America's weather originates

FROM THE VERY FIRST DAY, nearly a century ago, that she set a course across the Bering Sea, the United States Coast Guard cutter *Bear* began accumulating new knowledge of the North.

Usually it fell to the lieutenant (junior grade) to log notes on tides, currents, bearings, soundings, skies, shoals, and ice. And weather. Always, *the weather*. Early, the Bering earned a reputation among mariners as "a weather breeder like no other."

The *Bear* braved gales that ripped away her barkentine rigging. Her crew jettisoned tons of snow and sleet as the barometer fell below 27 inches. She ran hard aground in opaque fog. She hid in the lees of islets while drifting ice floes ravished lesser ships around her. Once in 1922 in an arctic floe, she was seized fast, squeezed tight, and lifted like a lemon twist on a bowl of frozen punch. In her 41 consecutive years in Alaskan waters, she captured smugglers, monitored hunters, assisted sourdoughs, doctored Eskimos, and showed the American flag. She also saved the lives of 5,000 people in the harsh northern climes.

Today, the pioneering science and public service of the *Bear* is being advanced in an innovative study financed by five oil companies under the leadership of Exxon Company, U.S.A. The other four participants are ARCO Alaska, Inc., Chevron, USA, Inc., Cities Service Company, and Shell Oil Company. While submerged sensors measure sea-floor currents and pressures, unmanned buoys bob among whipping waves. Computers digest observations from the robots at sea and other stations ashore. Radios bounce the data off satellites for immediate use by U.S. weather analysts using Exxon's decoding instructions.

Benefits abound. They range from better daily weather forecasts for Alaska natives to smarter long-range planning by ocean engineers. For the first time, much of the Bering broadcasts its behavior to the world outside. The fresh torrent of information flowing from this tempestuous sea calls to mind the poet's wonder, "What are the wild waves saying . . . ," and his refrain, "the voice of the great Creator dwells in that mighty tone."

Respect me, says the Bering. Tens of thousands of years ago the First Americans wandered this way, across the Bering Land Bridge. Then the sea rose, flooding Beringia (as that prehistoric land is known), but descendants of Siberian migrants prospered along the shores of what is now Alaska, and upon the archipelago called the Aleutians. Intimately involved with the weather, the Aleut people embraced a legend of the origin of human life — in which the Raven god flapped its enormous wings and caused a windstorm to blow breath into the first Aleut.

In these capricious waters Vitus Bering lost his life, and to them he gave his name. The Russian expedition in 1741 surveyed the sea that separates the earth's largest and smallest oceans: the Pacific and the Arctic. Shaped somewhat like an isosceles triangle, the Bering at its apex pinches to a strait with only 56 miles separating America and the Soviet Union. Southward the notably shallow Bering drowns a continental shelf for hundreds of miles.

With the Russian expeditions began the systematic scrutiny of the Bering. Biologist George Steller, and the seamen and naturalists who followed, described the moods of an unpredictable sea: long cold winters, brief cool summers, less precipitation than some deserts, winter sea ice in the north, summer turbulence in the south. Fueled by frigid air off Siberia and the Polar Basin, Bering storms could blow up at any season. Northern lights draped the nights. Then in the midnight sun, lenses of air bent sunrays into mirages on the Bering horizon. Ice crystals in the atmosphere mocked suns and moons as wheels of light.

Russian sealers and settlers added to the weather record. Yankee whalers and prospectors, Oriental fishermen, Canadian shippers, and Alaskan hunters augmented the findings of government servants. It was determined that the Bering Sea lies almost entirely within the 50-degree Fahrenheit isotherm; this meteorologist's term describes a line isolating that part of the globe where the mean maximum temperature during the warmest month of the year never rises above 50 degrees. It seems an exaggeration, but archaeologist Waldemar Jochelson reported that during 19 months in the Aleutians, he experienced exactly *nine days* entirely clear of fog, mist, and rain.

The U.S. Navy established a coaling station at Dutch Harbor midway across the Aleutians in 1902. A decade later a primitive radio began beaming intermittent weather notes. But not until World War II did a semblance of modern weather science come to the Bering region. Contesting Japan in the Aleutian Campaign, American pilots flew "in the foulest weather in any theater of the war." Desert-trained American troops suffered amphibious assaults in bitter cold. An ack-ack gunner on the battleship *Mississippi* remembers "unprecedented rolls for a ship 625 feet long." In such a confusion of natural forces, battles were launched against unoccupied islands and barrages laid down upon nonexistent fleets.

Studies of northern weather in various parts of Alaska continued after the war. Radar outposts doubled as meteorological stations. Scores of inquiries got under way at the Naval Arctic Research Laboratory at Barrow with some extending onto ice islands adrift in the polar pack of the Beaufort Sea. On another frontier, the North Pacific, Scripps Institution oceanographers initiated an ambitious program to determine the interrelationships of the sea and air and their effects on

North American weather.

More recently, important studies of weather and sea conditions have been sponsored by industries interested in operating in the North. Advance parties in helicopters and participants in the historic voyage of Exxon's ice-breaking tanker, the *S. S. Manhattan,* in 1969 contributed volumes of findings about aspects of sea ice in the Beaufort Sea. At the same time oil companies underwrote an appraisal of the weather record of the Chukchi Sea: 3,000 government agency charts and diagrams and millions of climatic and oceanographic records. Extensive surveys preceded offshore drilling in the icy Cook Inlet. For 33 months the winds and waves of the Gulf of Alaska were monitored by a system of buoy robots.

"We know a great deal about other northern waters around Alaska, but before this study, our knowledge of year-round weather conditions in the Bering Sea was limited," says John Vermersch, Exxon's project manager for the latest Bering Sea Comprehensive Oceanographic Measurement Program. "The sea is not frequently traversed, and the weather bureau maintains only one first-class weather station in the Bering itself, on St. Paul Island of the Pribilofs," Vermersch points out.

"As we have in the Gulf of Mexico, the Arctic's Beaufort Sea and elsewhere, we are seeking to expand our knowledge in designing offshore structures to withstand the worst of winds, waves, weather, and ice."

Of course, a climatological archive exists. Temperatures in northern reaches plummet to minus 70 degrees F. ashore and to minus 20 offshore. In southern areas winds of 110 mph have been documented on land and 125 mph at sea. A true picture of a sea's history of waves is more difficult to get. Prudent skippers avoid big waves; shore observers seldom see them.

Vermersch explains that wave assessment is aided by a method called "hindcasting." For the Bering, the detailed profiles of 20 raging storms were fed into a computer. From this computer model of the Bering's weather history, scientists attempt to foretell how the Bering will behave in similar situations in the future.

"In some of the research we pursue," says Vermersch, "we need to know what impact, if any, our activities might have on the environment. In this program, we also want to know what impact, if any, the environment might have on us!"

Thus, Exxon designed, developed, and implemented the $7.5-million, two-year adventure — bugging the Bering Sea for wave action, meteorological phenomena, and oceanographic data. Something new: summaries are transmitted in "real time," never older than three hours. Scientists use the information to calibrate the Bering Sea computer model "hindcast" and to confirm extremes in waves, winds, and currents.

In early summer last year, in the storied track of the *Bear,* another vessel, the fishing boat *Wizard,* departed Seattle for a Bering cruise. Adopted to oceanographic duty, the *Wizard*'s deck was crammed with gear. There were buoys bristling with antennae, solar panels, minicomputers, anchor chain, self-contained weather stations, and much more.

Working out of the old Dutch Harbor naval base, the *Wizard* completed a Bering odyssey under the command of Vermersch and the oceanographic firm of Brown and Caldwell of Walnut Creek, California. Her young crew deployed large, disc-shaped buoys in the Navarin Basin near the Russian border, in the North Aleutian Basin, the St. Lawrence Basin, and the St. George Basin. Immediately, information on wind conditions, barometric pressure, air and sea temperature, and waves fed into an on-board computer for transmission via satellite to the National Oceanic and Atmospheric Administration's Earth Satellite Service in Maryland. Smaller buoys with similar capabilities were set at these and other Bering sites. Bottom-mounted sensors were placed to gather and tape-record data about currents, pressures, and temperatures at depth. On a later cruise *Wizard* changed batteries and retrieved tape recorders from these sensors.

"Our cruise was something of a first," says Charles E. Rambo, project manager for Brown and Caldwell. "Employing the latest in electronic equipment, we've combined continuous data collection, data transmittal by satellite, and satellite tracking of buoys.

"It all sounds so *technical,*" Rambo admits, "but our cruise was also a very *human* experience."

Never will he forget, says Rambo, the teeming wildlife of St. Matthew Island, now designated the Bering Sea National Wildlife Refuge. Guided by a ranger from the U.S. Fish and Wildlife Service, Rambo and crew landed by rubber boat and placed a meteorological tower. One whale, 126 walruses, and "uncountable clouds of puffins and other seabirds" greeted the shore party.

An oceanographer with seven years of training at Scripps, Rambo speaks of "view upon view of indescribable beauty. To a natural scientist, the Bering Sea can be one step beyond the greatest previous thrill." For the Bering, harsh it may turn at times, is uniquely productive of whales, seals, walruses, and fishes. The Bering husbands the largest marine mammal populations in the world, the largest clam beds, the largest stock of eelgrass, the highest densities of birds, and more commercial fishes than any other sea.

It wasn't always so. Alaskan fur seals once numbered 3 million on the Pribilof Islands alone. Subjected to merciless slaughter, the seals nearly vanished in the early 20th century. But today, under modern management, a million-and-a-half fur seals annually return to the Pribilofs to whelp their pups and breed. Other rookeries nurture once-rare sea otters, now numbering 80,000, and 100,000 sea lions. More northern waters contain 130,000 walruses. Bird resources of epic proportions include some 222 species, 22 million seabirds, a million geese, 4 million ducks, and a minimum 100 million shore and wading birds. Fishing boats of a half-dozen nations fill their refrigerated holds with cod, crab, and salmon.

The two main Pribilof Islands, St. Paul and St. George, also support Aleut villages of a few hundred people each. The Aleut people suffered through dread times. Impressed, murdered, and exploited by foreigners, displaced by war, Alaskan natives today jealously guard their natural world and traditional life ways, such as subsistence hunting. Aleut leaders at St. Paul granted permission to set up a weather station there.

But with characteristic independence, the Eskimo leaders of St. Lawrence at first withheld approval for a tower. Rambo went to the island, met with village leaders, and emphasized the values of improved weather forecasting for a people who derive so much of their living

from the sea. In the end, the Eskimo council voted in favor of the St. Lawrence weather package. Natives from Gambell and Savoonga helped install the station and later provided transportation to and from the site for routine maintenance.

"The benefits of the Bering Sea study have been immediate and revolutionary," reports J. W. Nickerson, NOAA's marine observation program leader, headquartered in Silver Spring, Maryland.

"For other oceans, heavily traveled, we routinely receive accurate reports from 7,000 to 8,000 ships at sea," Nickerson says. "We have 20,000 ships' officers out there making 150,000 reports to us each month. But for the Bering, until now, we had only a few reporting stations on land and irregular reports from the relatively few ships in those waters. It was virtually a data void — right where so much of our North American weather originates. For the first time we have fresh data on waves to improve our forecast. For Alaskans who rim the Bering's shores, weather and ocean forecasts can mean life or death."

Pleased with progress thus far, Exxon and its partners have agreed to fund the Bering study through 1983. The *Wizard* will go again next summer to service the stations and buoys, to renew acquaintances among the Aleuts and Eskimos, and give voice to the Bering Sea. As the *Bear* demonstrated long ago, the more humans know, the more they can do. As a young oceanographer, Jim Bronson, recently mused:

"Whatever wealth is made available as a result of science done in the North, whatever Northwest Passage routes are opened, oil and gas wells brought in, magnesium nodules mined, or fish harvested, the real value of the exploration is going to be the spirit that motivates it . . . the freshness and zest for life and the attitude that says *let's try it, we can make do,* that the explorers find within themselves. This spirit is the real motherlode of the future, and it will inspire modern explorers . . . to push back the frontiers of what we know and what we can do." DON DEDERA

METEORITES LINKED TO MARS AND MOON

Theory Based on NASA Study of Antarctica Samples — Some Are Unconvinced

By WALTER SULLIVAN

WASHINGTON, Nov. 12 — Two pieces of Mars and one piece of the moon may have been found lying on clear blue ice west of McMurdo Sound in Antarctica.

Researchers based deductions about Mars and the moon on analysis of three meteorites among thousands found in that region.

The two samples believed to be Martian belong to a group of rare meteorites, only seven of which have been found elsewhere. Samples of them are now in a number of museums and, from analysis of the Antarctic specimens, it is being argued that all are Martian.

The two specimens have been under study at the Johnson Space Center of the National Aeronautics and Space Administration in Houston since they were found in the last few years. The sample believed to be lunar was found in January and is being studied by Dr. Brian Mason, curator of meteorites at the Smithsonian Institution.

Factors in Martian Theory

The analysts at Houston are Dr. Donald Bogard, curator of the National Repository for Antarctic Meteorites there, and Dr. Lawrence Nyquist. In a telephone interview, Dr. Bogard outlined his reasons for believing the source to be Mars.

Particularly persuasive, he believes, is the inclusion in the sample found at the Elephant Moraine in Antarctica of noble — rare — gases strikingly similar to those of the Martian atmosphere. Noble gases such as helium and argon do not readily react chemically. It appears that both this sample and the other, found at the nearby Allan Hills, were subject to violent shock about 180 million years ago. This could have come from the impact of an asteroid that blasted the Martian material into space. Such an impact, Dr. Bogard said, would tend to drive some of the Martian atmosphere into the sample.

One argument against a Martian origin comes from prior calculations indicating that if objects did break away from a planet they would probably fall back onto it. Some planetary scientists in addition to Drs. Bogard and Nyquist do not believe this argument to be ironclad, however.

Dr. Bogard also said the chemical composition of the samples was like that reported from automated analysis of the Martian surface by the two Viking spacecraft that landed there. The meteorite material seems to have been exposed to oxygen and water and its mix of heavy and light forms of oxygen is unlike that in other meteorites.

Effects of Differentiation

Furthermore, the samples show the effects of differentiation, the sorting of material under the influence of heat and gravity characteristic of processes on a sizable planet like Mars. Rock of one composition has included another formation in a manner also typical of planetary geology. Unlike other meteorites formed during the birth of the solar system 4.6 billion years ago, these solidified only 1.3 billion years ago, a process that would have occurred in the repeated recycling of materials on a planet with a hot interior.

No single argument is persuasive, Dr. Bogard conceded, but all taken together are impressive, a viewpoint echoed by Dr. Bevank French, a specialist in planetary materials at NASA's headquarters here. "If these meteorites do not come from Mars," he said "they are coming from a very, very interesting body."

As Dr. Bogard put it, their source has to have been of planetary dimensions. Venus is a poor candidate because its gravity, which is considerably greater than that of Mars, and its very dense atmosphere would impede ejection of material. Specimens from Venus would also have been altered by the extremely high temperature on its surface.

Debate Is Expected

"I expected a debate" among the scientists specializing in meteorites, he said.

Dr. Mason, for one, is not persuaded that Mars was the source. "You can make a case for it" he said "but it is not very strong." He asked why, if impacts can send fragments of Mars into space, more lunar meteorites are not found. The moon is far closer.

Dr. Mason is working on the Antarctic meteorite he believes did come from the moon. It is formed of material fragmented and cemented together with inclusions of anorthosite, rock typical of the lunar highlands as well as of the Adirondack Mountains on earth.

He recalled that when he examined a thin slice microscopically its appearance was unlike any meteorite he had ever seen. His first thought was: "That looks like an Apollo 16 rock." The Apollo 16 astronauts brought back samples from the lunar highlands. No samples have been returned from Mars that could be compared with meteorites suspected to be of Martian origin.

The latter fall into three classes named for where they were first found, although all are basically similar. One fell at Shergotty, India, in 1865. Another of the Shergotty type was later found at Zagami, Nigeria, and both Antarctic samples are of this classification. Three meteorites are of a type found first at Nakhala, Egypt in 1911 (one of them fell near Lafayette, Ind., in 1931). The third class consists of one found at Chassigny, France, in 1815 and another picked up in 1975 in South Australia.

They are known collectively as the Shergotty-Nakhala-Chassigny or SNC meteorites. When it was discovered in the 1960's that they are alike and all remarkably young, Dr. French said, "we began realizing there was something really funny about them."

Perhaps they all came from Mars, Dr. Mason remarked, but he said their origin is still "a jigsaw puzzle with a lot of pieces missing."

South Pole Comfort Has Come Far but It's Still Tough Place to Winter

By DONALD J. FREDERICK, *National Geographic* Dec. 17

SOUTH POLE, Antarctica—The early explorers who suffered and starved their way to the South Pole would think they had lost their minds or wandered off to another planet if they visited the place today. Surrounded by a snow covered plateau that seemingly recedes into infinity rises a huge blue aluminum dome.

Nestled inside, protected from the winds and drifting snow, are three small, boxlike, orange buildings. They contain the living quarters and many of the science facilities used by the modern-day frontier folk who staff America's outpost at the bottom of the world: Amundsen-Scott South Pole Station. In one way or another, all of the people at the base serve science, pursuing wide-ranging projects under grants from the National Science Foundation.

The dome and the few other structures that the station comprises are only about 500 feet from the South Pole. At 90 degrees south latitude, the pole marks the southernmost point on the globe and the southern extremity of the Earth's axis of rotation. It is the only place on Earth where every direction you look is north.

One of the first orders of business for visitors to the station is a trek to the pole. And the first stop is usually a red and white barber pole topped by a silver-colored globe and surrounded by the flags of the Antarctic Treaty nations.

Marked With Bamboo

This is all a bit confusing—even on a sunny austral summer day with the temperature at a balmy minus 45.6 degrees Fahrenheit—because this oasis of color in a white desert is only ceremonial. The real South Pole is marked by a simple bamboo stake driven into the ice 555 feet away.

Why aren't they in the same place? A slight incline on the underlying plateau moves the ice at the pole 31 feet a year. It is simple enough to move the bamboo pole, but it would be bothersome and time-consuming to rearrange the flags and the heavy barber pole each year. So as the bamboo stake is moved, it always stays planted on the geographic South Pole, while the barber pole and its flags, although never touched, keep moving. At the present drift rate, the two poles will share the same location in about 18 years.

By then the present station, which was completed in 1975, will have to be replaced.

Edward P. Todd, director of polar programs for the National Science Foundation, which funds the U.S. Antarctic science program, says a new South Pole station should be ready by 1991.

"The dome design worked rather well at minimizing the snow drift problem, but even so the rigors of the climate make the station's obsolescence inevitable," Todd said.

A permanent human presence at the South Pole is a comparatively recent development. About 9,000 people have been there.

Four Norwegians led by Roald Amundsen pioneered the way and on Dec. 14, 1911, became the first to reach the South Pole. British explorer Robert Falcon Scott and his team of four arrived a heartbreaking second on Jan. 17, 1912. Suffering frostbite, scurvy and starvation, all died on the desperate return trip.

Construction of U.S. Base

No one else set foot at the pole until Rear Adm. George Dufek and six companions landed there in a U.S. Navy plane on Oct. 31, 1956. Construction of a U.S. base began soon after.

The station, consisting of a few prefabricated huts and buildings, was ready for the 1957-58 International Geophysical Year, a period of renewed scientific interest in Antarctica when 12 nations established more than 50 bases on the continent and its islands.

Paul A. Siple, an Antarctic veteran and scientific leader of the first party to winter at the Pole, likened the experience to living on another planet.

There is the same sense of isolation today. Spring in the United states means the onset of winter at the pole, a period of near or total darkness. There are nine months of isolation—no supply flights with mail and fresh food, no new faces in the mess hall. Radio is the only link to the outside world.

There was a notable exception last year. In an unprecedented nonstop round-trip flight, a U.S. Air Force C-141 cargo jet flew from New Zealand, and on June 22—dark midwinter at the pole—battled high winds and poor visibility to parachute 2,760 pounds of supplies onto a drop zone lighted with kerosene lanterns.

Normally, the base is supplied by ski-equipped LC-130 cargo planes that land there only in the light of the austral summer. The first flight from McMurdo, the main U.S. base in Antarctica, usually arrives in early November; the last leaves in February.

The 17 people who wintered over last year recall the airdrop as a highlight of their season. "We were like kids at Christmas unwrapping the packages," said Michael Gilbert, who helped bring the plane over target. A repeat drop is planned this year.

'We Never Close'

Of course, Pole Station offers more mundane ways to help pass the leisure hours. Amenities include a pool table, library—lounge, a small gym, and a bar that boasts a liberal policy: "We never close; last one out turns off the lights."

For those who like it hot, there is a sauna and a Jacuzzi, a spacious tub fashioned from odds and ends by the crew that wintered at the base last year. In a touch of irony, a sign above the Jacuzzi reads: "Great God! This is an awful place," an observation made by Scott during his ill-fated 1912 expedition.

Modern frills have not taken all the menace out of Scott's words. The station is situated on a plateau 9,300 feet above sea level, making strenuous exercise difficult for many people. Then there is the weather, something always on everybody's mind. The temperature once plunged to a minus 113.3F, and days of minus 80F with winds of 15 to 20 m.p.h. are commonplace.

The snow whipped about by these winds hinders vision and makes even the shortest walk from the station a major expedition. Frostbite occurs but seldom results in serious problems. A doctor based at the station keeps close watch on his charges.

For some, the mental stress of isolation and confinement is a lot more troublesome than the weather outside. In this cloistered little world, personality conflicts are inevitable and there have been reports of drinking problems, drugs, and an occasional outburst of violence.

From all accounts, however, the 16 men and one woman who wintered over at the pole last year fared extremely well.

Thomas Plyler, the station manager, held weekly meetings for people to let off steam. This helped, but as Plyler, a veteran of a previous pole assignment, put it: "Whining about your difficulties just isn't going to matter in Antarctica. You have to find the wherewithal to face the problems that come up."

Cindy McFee, a scientist with the National Oceanic and Atmospheric Administration, coped very well despite being the only woman. She was the third to spend a winter there with men only, and hopes to have been the last. "Just having another woman to talk to would have helped," she said.

Of the 18 people now at the pole, two are women, Kathy Covert, a geologist from the U.S. Geological Survey, and Merriann Bell, a cook hired by ITT Antarctic Services Inc., the private contractor that provides the support personnel for the scientists at U.S. stations in Antarctica.

No matter what the task, the main goal for the people who serve at Amundsen-Scott is to carry on scientific research. Pole Station's location high on a plateau far from the sources of man-made pollutants makes the site ideal for many projects.

Gases in the atmosphere are constantly monitored by scientists from a small building near the main camp. They postulate that if significant changes are detected over a clean air site such as the pole, real trouble may be in store elsewhere.

A steady increase in carbon dioxide at the pole and other sites has been detected in the last few years, raising fears of a worldwide warming trend that might alter weather patterns and trigger the disintegration of the West Antarctic ice sheet.

Solar astronomers, attracted by the clear, dry air and long periods of sunlight, have erected two telescopes on the plateau for a close look at the inner workings of the sun. The sun rises in mid-September and does not set until mid-March.

The darkness during the rest of the year also will be used by scientists, who next year will install infrared detectors to study the stars. By measuring the infrared radiation emanating from the stars, they hope to learn more about star formation and the chemical changes going on in our Milky Way galaxy.

Other projects involve satellite tracking, measurement of cosmic rays from space, weather balloon launches and seismology.

The first territorial claim to part of Antarctica was made by the British in 1908. Six other countries now have claims. Most are shaped like slices of pie, bounded by arcs established at 60 degrees south latitude and by lines of longitude that meet at the pole.

Neither the United States nor the Soviet Union has made claims and neither recognizes the claims of others. But by occupying Amundsen-Scott Station year-round at the South Pole, the United States reinforces its non-recognition policy.

Brazil eyes research base in Antarctica

BRASILIA, Brazil (AP)—This South American country, most of which broils under a tropical sun, is planning an expedition to establish research bases and facilities in the ice of Antarctica.

"We're ready for this expedition," said Luiz Filipe de Macedo Soares, the Brazilian Foreign Ministry's United Nations Division Counselor. "We've been planning it since 1975."

A ship, purchased from Denmark for $3 million, is en route to Brazil and the expedition's departure is set for late December, Macedo Soares said.

December is summer time in the Southern Hemisphere.

Brazil and foreign diplomats say that the move to establish research bases and facilities will give the world's fifth largest nation a voice in the future of Antarctica.

Brazil waited until 1975 to sign the 1959 treaty calling for peaceful cooperation in the 5-million-square-mile area. The treaty also froze all territorial claims in Antarctica by France, Britain, Argentina, New Zealand, Australia and Chile.

"We delayed because of the money it took for the planning of our country," Macedo Soares said. "But last year we decided we couldn't delay anymore."

The Antarctica treaty is up for renegotiation in 1991.

"It is important that we are included in this group that decides," he said. But in order to be a part of that select group, Brazil must show that it has an active interest in the area and is doing something about it.

"We are planning one expedition each year in the summer."

"For our proximity, we have an interest in wanting a part in any decision that is made," Macedo Soares said.

Brazil has said it does not want to claim land, but instead wants the area used for peaceful studies and exchanges of information.

But some foreign diplomats in Brasilia, all of whom asked not to be identified, said Brazil's push to be part of the "Antarctica Club" is a step away from the nation's chosen role as a Third World country toward an acceptance of authority and influence.

"It's part of wanting to be a superpower in the Atlantic," said a European diplomat.

Another European diplomat said, "This is the first time they are able and willing to act as if they are on a higher level."

Macedo Soares says Brazil's interest for now is scientific, and the nation hopes to learn more about such things as how the Antarctic affects weather in the south.

Several countries, including the United States and Britain, have volunteered technical assistance or suggested partnerships in the upcoming expedition. Brazil, which has participated in Antarctic trips with Chile and Britain, says it will make its first voyage alone, however.

"Antarctica is a small club," Macedo Soares said. "Others see that we are serious and it will be an exchange of information."

A Western diplomat said the U.S. offer to help is simply part of an existing scientific pact calling for exchanges between the two nations.

"If there is to be an Antarctic power struggle, we want them on our side," a British diplomat said.

There had been reports that Brazil was going to buy the British ship the Endurance, which was later used in the war between Britain and Argentina over the Falkland Islands.

"That was a mistake," said a British diplomatic source. "The Endurance was never really up for sale." The source also said Britain's fight for the Falklands and South Georgia islands was in part to keep its South Atlantic claim to Antarctica. Nov. 3

Thala Dan sold to Brazil

On 23 September 1982 10.30 GMT The Ministerio da Marinha, Brazilia took delivery of the polar-research vessel *Thala Dan*.

After 25 years of faithful service under the JL colours *Thala Dan* has been sold to the Brazilian Navy, and she is now sailing under the Brazilian flag as *Barão de Teffé*, named in honour of the Baron of Teffé, Admiral Antonio Luiz von Hoonholts, a remarkable seaman and hydrographer, and one of the first to survey the Brazilian coast and rivers.

The official take over of the ship was on 28 September at Aalborg Værft, where *Barão de Teffé* has been docking before delivery to the buyers.

Barão de Teffé left Aalborg mid October for Brazil via Southampton and Lisbon and will soon take up her duties as an oceanographic support ship in the Antarctic waters for the Brazilian Navy.

Q. *From what did the oil found in frozen and barren areas of northern Alaska form?*

A. When the oil deposits in Alaska were formed millions of years ago, the climate was much warmer. Plant and sea life flourished under the warmer conditions, resulting in decayed organic debris that produced the petroleum found in Alaska.

The Struggles of Penguins

Parents who think they have to work hard just to keep food on the table for their children might want to consider the depth-defying travails of penguin parenthood.

Scientists have found that penguins appear to dive deeper into the ocean for their food than any other nonmarine animals. This is such difficult work that they must eat more than two pounds of squid to get the energy for every pound they are able to catch for their offspring back on land.

Studying king penguins on South Georgia Island in February 1980, researchers from the Scripps Institution of Oceanography and the British Antarctic Survey attached tiny pressure-sensing depth recorders to the feathers of three adult penguins just before the birds went to sea to forage. Three other penguins were injected with radioactive water used to measure metabolism rates.

Three of the birds were gone for four to eight days, averaging 144 dives a day. Half those dives were to depths of more than 160 feet, involving strenuous swimming. Their deepest dives were to more than 785 feet. Only the emperor penguin, a close relative, is known to dive deeper.

By measuring the radioactive water remaining in the penguins' blood before and after their trips to sea, the scientists were able to calculate the birds' metabolic rates and estimate that they used 2.8 times more energy foraging than they did normally.

The researchers estimated that the penguins actually caught squid on only one dive in 10. To keep going, they had to eat roughly five and half pounds of squid daily. Their chicks, back on shore, require about 1.7 pounds of squid daily. On an average trip of 865 dives, each penguin had to catch between 50 and 90 squid to feed itself and its chick.

Crabeater seals don't eat crabs. They dine on krill, small sea creatures that resemble shrimps. More than 30 million crabeater seals—more than any other species—live along the outer edge of the antarctic ice.

Chinese Scientists Explore Antarctica

SINCE the discovery of Antarctica in the 1820s, scientists have made great sacrifices to unveil the mysteries of this continent.

Covering an area of about 14 million square kilometers and with an average height estimated at 2,500 meters above sea level, Antarctica is the highest continent in the world. By far the coldest continent, its lowest surface temperature is -88°C. and its yearly mean temperature is -25°C., lower than that of the Arctic. That of the inland highland is -56°C. Ninety-five percent of the continent is covered by a 2,000-meter-thick ice sheet, representing 70 percent of the world's freshwater.

The sea level would rise as much as 60 meters if the ice sheet were to melt.

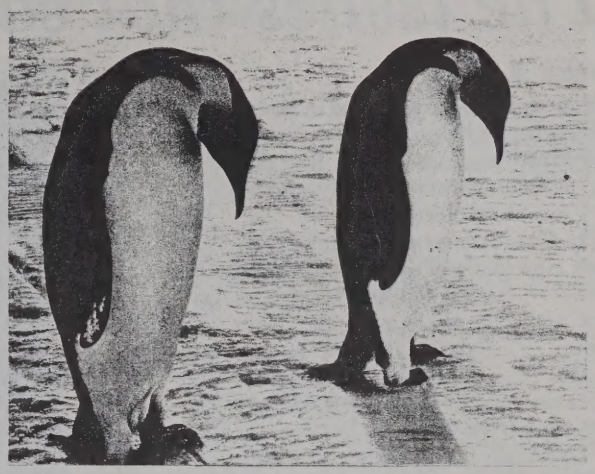
Known as the "White Desert," Antarctica is considered one of the world's most arid regions; the average precipitation is only 30-50 millimeters per year over the polar plateau (approximately the annual precipitation in the Sahara Desert), though 200-500 millimeters fall in the coastal areas (about the annual precipitation in China's Inner Mongolia and Ningxia Hui Autonomous Region). Fierce winds with velocities ranging between 30-50 meters per second prevail for one third of the winter in Antarctica. Gusts may reach 100 meters per second, tripling the speed of a hurricane with a wind force of 12 on the Beaufort Scale. However harsh the natural conditions are in Antarctica, mankind, greatly attracted by its unique landscape and its rich mineral and biological resources, will never stop exploring it.

In January 1980, two Chinese scientists, Dong Zhaoqian and Zhang Qingsong, visited an Australian station in Antarctica on invitation, and made observations of the continent for the first time. In January 1981, they were invited to join in an international effort to explore the continent. Dong Zhaoqian took part in the first "BIOMASS" (Biological Investigation of the Marine Antarctic System and Stocks). His principal work was to ascertain the amount, distribution, and living conditions of krill — the basic organism in the higher food chain in Antarctica — in order to provide a scientific basis for its rational use and the maintenance of the aquatic ecosystem in Antarctica. He worked on board the survey ship *Nella Dan* 77 days, covering a distance of 30,000 kilometers. Zhang Qingsong spent ten and a half months at Davis Station studying evolution (since the Epipleistocene epoch) of the area around the station, changes in the climate, the advance and retreat of the ice sheet, the rise and fall of the land mass, and the changes of the sea coast. Dong and Zhang are the first Chinese scientists to explore Antarctica.

Last winter and spring, 11 Chinese scientists were invited to join in scientific research at Australia's Casey, Davis, and Mawson Stations, New Zealand's Scott Station, Chile's P. Frei Station, and Argentina's Marambio Station. Three of them are still there.

During their stay in Antarctica, they also visited McMurdo Station (United States), Dumont d'Urville Station (France), Arctowski Station (Poland), and Bellingshausen Station (Soviet Union). They were warmly received by the officials and scientists there. The National Institute of Polar Research of Japan has sent China a number of documents, charts, and pictures about Antarctica.

In order to further explore Antarctica and contribute to its peaceful development, China established a National Committee for Antarctic Research last year. Since China only recently started exploring the continent, she has to learn from advanced countries and looks forward to scientific exchanges with them.



A matching pair.

Zhang Qingsong, the first Chinese scientist to winter in Antarctica, surveys the periglacial landform near Davis Station. By C. Heath

Chinese scientists Dong Zhaoqian (left) and Zhang Qingsong (right) with Dr. K. Kerry at Casey Station.

CHINA PICTORIAL, Printed in the People's Republic of China

The issues that carried South Pole mail

Ernest A. Kehr

You won't find them listed in Scott's Catalogue, but two pairs of stamps overprinted and used in the first decade of this century actually carried mail out of Antarctica.

The first of them came along in 1908, when New Zealand took 24,000 copies of two types of one-penny stamps on hand and gave them a simple "King Edward VII/Land" overprint in two vertical lines. The New Zealand Post Office retained 60 for its archives; 448 were sent to the Bern headquarters of the Universal Postal Union for distribution to its members as evidence of their validity for use on international mail, and the remainder were turned over to Lt. (later Sir) Ernest Shackleton.

Having arrived in his ship, the Nimrod, Shackleton was seeking ways to have crew members' mail handled during their two-year stay in Antarctica while trying to reach the South Pole. To make it completely official, Shackleton was appointed postmaster, supplied not only with the stamps but with postmarking equipment for use on the sail-and-steam ship "pending establishment of a shore station at Cape Royda in the Ross Sea."

As letters were written by the crew, they were franked with these stamps, but held aboard until they could be carried back to New Zealand on two trips of the "Koonya" supply ship. There were two, and mail (Shackleton estimates about 2,000 pieces) was given the "Brit. Antarctic Exped." postmark, dated either "FE. 3.09" or "Mr. 4.09." In addition to mail sent from there, Shackleton buried a brass cylinder given him by New Zealand's Prime Minister, marking the spot — 97 miles from the Pole — which he had received from Queen Alexandra when she inspected the Nimrod prior to its leaving England. Among other things, copies of the stamps were enclosed and still may be buried in the polar ice for someone to find.

The second pair was produced by New Zealand for the Capt. Robert Scott expedition of 1910-13, when the same arrangements were made for crew members' mail sent from his ship, the "Terra Nova." Records indicate that 2,400 half-penny King Edward VII and 24,000 one-penny Commerce stamps were given a "VICTORIA/LAND" overprint in two horizontal lines. Of these, 400 were sent to the UPU; 129 were retained for the archives, and about 360 destroyed because of faulty overprinting.

Upon arrival in McMurdo Sound.

Scott established a base at Cape Evans whence mails were dispatched before the tragic end, in 1912, of the expedition. Scott and his companions reached the Pole, but on the return ran out of food and perished.

When the survivors of the expedition returned to England, they offered the remaining unused copies of the stamps as souvenirs to raise funds to publish a record of the ill-fated trip. They were available unused or stuck to an explanatory card and favor-postmarked with official cancellation, dated "JA. 18 1913," the day the Terra Nova took survivors home from Camp Evans.

When I was much younger, these weren't overly expensive despite their relative scarcity. I recall the late J. Murray Bartels, an eminent New York dealer, had a handful he offered at less than $7 for all four. They didn't move largely because they weren't Scott-listed and there wasn't much interest in Antarctic material in those years.

The philatelic and topical popularity of South Polar items was sparked in 1933, when Washington issued a special three-cent stamp to publicize the Little America expedition of Adm. Richard E. Byrd. Collectors could affix one to envelopes and send them along with a 50-cent service fee, to be dispatched to a base post office on the coast of the Ross Sea. There they were given a "Little America" postmark and returned to the addresses on the next expedition ship to come back to the United States.

The mad scramble for South Polar real estate in the 1950s gave the philatelic Antarctica material its real impetus. Almost all of the nations that sent expeditions to stake out claims on the frozen continent also produced stamps to proclaim their efforts.

Most of these were sold in unused condition in the marketplace, but some actually franked covers that were mailed from the various bases.

These new stamps and covers led to a rather strong collectors' search for anything related to the pioneer attempts to reach the South Pole, prices for which began taking off after decades of oversight or neglect.

In the current Stanley Gibbons price guide of England, the four New Zealand provisionals are given a quotation of 2,560 pounds (about $5,000).

Only last June 24, Harmers of Sydney Pty. Ltd. sold a single half-penny Victoria Land Stamp affixed to a British Antarctic Expedition certificate of genuineness for a surprising $A1,150.

Huskies still have a place

From the DSIR Antarctic Division

IT was a weary 15 huskies that arrived back at Scott Base last week (right). In three days, they had covered 172km over the McMurdo Sound sea-ice. A fourth day had been spent waiting out a blizzard.

The journey accomplished several objectives. Primarily it was the doghandler's handover trip. Mr Gary Bowcock, of Paparoa, in Northland, has been the Scott Base doghandler for the last year and he led the dog team on the outward journey to Butter Point. During the outward leg, the new doghandler, Mr Bill Eaton, of Auckland, was familiarised with the many aspects of field work and doghandling. These included problems of travel on sea ice, sledging techniques, dog handling and familiarisation with the McMurdo Sound geography.

On the return leg, Mr Eaton took over the reins, an experience he found rewarding but "very tiring." "Not at all like elephants" he joked, his last job having been an elephant trainer at Auckland zoo.

The second objective of the journey was to monitor the spring growth and movement patterns of sea-ice in McMurdo Sound. Involving a fortnightly drilling of holes at selected locations to determine ice thickness and movement, this monitoring programme begun last summer is essential for the planning of the major CIROS (Cenozoic Investigations in the Ross Sea) drilling project, which will commence during the 1983/84 season. As summer approaches, the sea-ice develops cracks and may move out to open sea. Such movement forced abandonment of the 1979 drilling project in McMurdo Sound.

Accompanying the two doghandlers on the journey was Mr Colin Monteath, field operations officer with DSIR's Antarctic Division.

Surface conditions over the four days varied from a thin veil of velvet-smooth snow over the sea-ice to rough, broken sea-ice. Temperatures averaged minus 30 degrees C, bitingly cold for the three men but enjoyed by the huskies, which will be used by Mr Eaton in the coming year in support of a variety of local science projects and recreational trips.

Record cold at South Pole

Scientists spending the winter at the South Pole have reported the lowest temperature ever recorded there — minus 117 degrees Fahrenheit.

The bone-chilling temperature was recorded at the Amundsen-Scott South Pole Station on June 23, under clear skies and with a light wind blowing. The previous record cold there was minus 113 degrees, measured in July, 1965.

Cold as it was, it was not a record low for the Antarctic continent. That distinction belongs to the Soviet station at Vostok in Wilkes Land — where the temperature tumbled to minus 127 degrees on August 24, 1960.

Dad-Daughter Team To Explore Antarctic

HOUSTON (AP) — John and Kris Annexstad are planning an unusual family outing — a 40-day scientific expedition they believe will make them the first father-daughter team to explore the Antarctic.

Annexstad, a planetary scientist at the Johnson Space Center, will spend 40 days camping on the snow and ice with his 22-year-old daughter, an architecture student at Rice University.

Annexstad will turn 50 during the meteorite-collecting trip. It will be the ninth birthday he has spent in the Antarctic.

"This time I will have someone with me that I know well and love," he said.

GOING WITH THE FLOE

When that big refrigerator in the Panhandle swings open and a Blue Norther sweeps through, the second University of Texas at Dallas president should feel right at home. Dr. **Robert Rutland** spent years as a polar explorer.

The 49-year-old geologist has made nine trips to Antarctica. In 1968, he vowed never to return to the frozen south. In 1972, he was named head of the University of Nebraska's Ice Project. Three years later, the National Science Foundation asked him to direct its Polar Programs.

Rutland took over his duties as UTD president last May. Since then, he has been involved in the self-evaluation and planning under way throughout the UT system.

The polar researcher has not abandoned the land of the penguin. He recently convened a meeting on the environmental consequences of mining Antarctica.

Weather tests

NZPA Staff Correspondent

WASHINGTON. — Atmospheric tracers will be released from Christchurch and from near the South Pole later this year in an attempt to understand how Antarctic weather patterns influence climates all over the world.

The project is being coordinated by Dr Paul Guthals, of the Los Alamos National Laboratory.

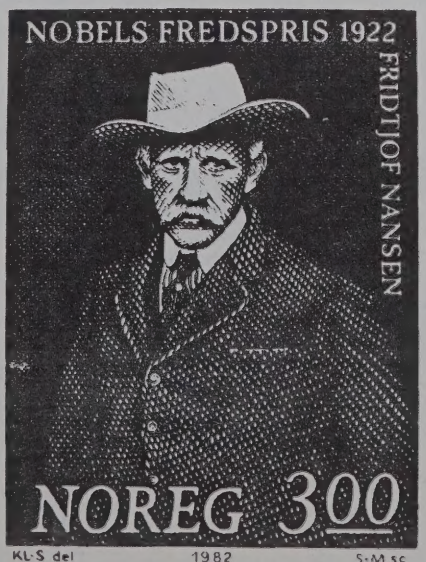
His team will check air flows to the periphery of the Antarctic continent. The tracer to be released from Christchurch will provide data on the flow of air returning to Antarctica.

The tracers work by measuring pollutants such as carbon dioxide and suspended particles in the atmosphere.

Scientists will drill 450 metres into the ice at the United States, Amundsen-Scott South Pole station this season to obtain a core which they hope will reveal secrets about climate thousands of years ago.

The electro-mechanical drill will go more than twice as deep as a probe last year which went down about 200 metres into the 2,700 metre-thick ice at the Pole.

Tiny air bubbles in the ice will be analysed to provide clues about the composition of the atmosphere as far back as 6,200 years ago, and dust in the ice should reveal past volcanic activity, the National Science Foundation said.



Soviet Hydrographic Voyage

MOSCOW, Dec. 10 (UPI) — Two Soviet hydrographic ships have left the Black Sea port of Sevastopol on a voyage around Antarctica, the Communist Party newspaper Pravda reported today. The research vessels Admiral Vladimirsky and Thaddeus Bellingshausen are to duplicate the course followed by Russian explorers who sighted the Antarctic continent in 1820. Geophysicists on the current voyage hope to fix the location of the south magnetic pole, Pravda said.

At Sledgers Glacier (71°26′S 162°48′E) in the Bowers Mountains a member of Antoni Wodzicki's (Western Washington University) party prepares the camp. The pyramid-shaped Scott tent, similar to tents used by Robert F. Scott, is stable in high winds and can be erected quickly. The dome-shaped, nylon Blanchard tent is another standard antarctic shelter.

NSF photo by Russ Kinne.

NSF photo by Russ Kinne.

Mason Hale, Smithsonian Institution, studies a sedimentary rock. Dr. Hale is a member of the biology team that came to northern Victoria Land to continue an investigation of algae, fungi, and bacteria living just beneath the surface of rocks.

NSF photo by Russ Kinne.

The northern Victoria Land base camp was established at the north end of Evans Névé near the head of the Canham Glacier (72°12′S 163°50′E). Like similar camps in prior years at the Darwin Glacier and Ellsworth Mountains, this one supported a large group of geologists, geophysicists, and glaciologist. The helicopter is one of three UH-1Ns used to transport field teams.